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Effectiveness of home-based cardiac rehabilitation programme using an individualised exercise (physiotoools-r)

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Background: The Kingdom of Saudi Arabia (KSA) is facing a significant increase in the mortality rate from cardiovascular diseases (CVDs) and the prevalence rate of coronary heart disease (CHD) which is the commonest cause of death from CVDS in KSA. These epidemiological rates in the KSA are predicted to increase due to increased exposure to CVD risk factors. The National Institute for Clinical Excellence (NICE) and the American association of cardiovascular and pulmonary rehabilitation (AACVPR) reported that participation in Phase III cardiac rehabilitation (CR) programmes is associated with a reduction in both morbidity and mortality rate of CHD for patients following Percutaneous Coronary intervention (PCI) or coronary artery bypass surgery (CABG). Currently there is no phase III provision of CR for CHD patients in KSA.

Aim: To evaluate the effectiveness of home-based cardiac rehabilitation (Home CR) programme using an individualized exercise (Physiotoools-R) compared to phase III Hospital-based cardiac rehabilitation (Hospital CR) programme and standard care of Home instructions on exercise capacity, psychological, physiological, body composition and quality of life of CHD patients post CABG surgery.

Methods: Seventy-three eligible participants were recruited from the King Faisal Heart Institute (KFHI), Riyadh, Saudi Arabia. All participants had previously been diagnosed with CHD and were 6-8 weeks post CABG surgery. Participants were randomly assigned to one of three groups; Hospital CR group (n=25), Home CR group (n=24) and control group (n=24). Participants in each group were measured at three stages: at baseline (stage one), post 8 weeks of cardiac rehabilitation intervention (stage two), and then repeated again after 4 weeks of observation follow up (stage three). The incremental shuttle walk test (ISWT), Metabolic equivalent tasks (METs), hospital anxiety and depression scale (HADS-A and HADS-D), the SF-36 questionnaire in addition to body composition; body mass index (BMI) and waist hip ratio (WHR) were selected as the outcome measures

Intervention: Hospital CR programmes of group based aerobic circuit training and a similar structured individualised exercise programme using Physiotoools-R were selected for both intervention groups for a total of 8 weeks 3 time/week, 2 hours per session in addition to 4 weeks observation follow up. The control group followed standard care which comprised of Home instruction about self-walking and post operation precautions.

Results: The results showed that the ISWT distance clinically improved post 8 weeks of CR intervention in both intervention groups compared to baseline. Hospital group increased by 71m, Home group by 66m $p < 0.001$, but the control group statistically improved by 3m $p < 0.001$. However, post 4 weeks of observation follow up the ISWT distance of the hospital group decreased by 26m, but continued to improve in the home group by 22m $p < 0.001$. However, no significant change was reported in the control group 2m, $P > 0.05$. Similarly, all outcome measures: METs scores, HADS-A and HADS-D, the physical (PCS) and mental (MCS) components of the SF-36 showed statistically significant improvement post CR intervention $p < 0.001$, however, this improvement was significantly decrease post follow up in Hospital group $p < 0.001$, however, it continued to improve in home group $p < 0.001$. Though, there was no significant change in the control group $p > 0.05$.

Conclusion: The results of the present study demonstrate that home-based CR is as effective as hospital based CR programme

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post 8 weeks of intervention. However, these results changed post 4 weeks from the intervention. The present study findings are consistent with previous studies results (Moholdt et al 2012; Hung et al., 2012; Manhas et al 2013), undertaken in different continents and cultures to Saudi Arabia. The findings of this study should confirm that home structured exercise has similar effect as hospital Phase III CR in improving functional capacity, physiological, psychological status, body composition and quality of life of CHD participants post CABG procedure. Thus applying home CR programme for patients in remote area will reduce the re-hospitalisation rate and will contribute in improving the quality of life of those patients. In addition it may that it will increase compliance and be more cost effective for both the patient and hospital.

Biography

Muhammad Takroni is an Cardiopulmonary Rehab Specialist and Inpatient supervisor, Physiotherapy Dept of King Faisal specialty hospital and research center. His main interest are new innovation in the field of physiotherapy and rehabilitation.

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